

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number  
**WO 2005/069400 A1**

(51) International Patent Classification<sup>7</sup>: **H01L 51/20**

(74) Agents: **SLINGSBY, Philip, Roy**, et al.; Page White & Farrer, 54 Doughty Street, London WC1N 2LS (GB).

(21) International Application Number:  
PCT/GB2005/000130

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 17 January 2005 (17.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0400997.3 16 January 2004 (16.01.2004) GB

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **CAMBRIDGE UNIVERSITY TECHNICAL SERVICES LIMITED** [GB/GB]; 16 Mill Lane, Cambridge CB2 1SB (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **ZAUMSEIL, Jana** [DE/GB]; Cavendish Laboratory, Madingley Road, Cambridge CB 0HE (GB). **SIRRINGHAUS, Henning** [DE/GB]; 73 Whitwell Way, Coton, Cambridge CB3 7PW (GB). **CHUA, Lay-Lay** [SG/SG]; Blk 53, Hillview Avenue #02-04, Singapore 669566 (SG). **HO, Peter, Kian-Hoon** [SG/SG]; Blk 53, Hillview Avenue #02-04, Singapore 669566 (SG). **FRIEND, Richard, Henry** [GB/GB]; 37 Barton Road, Cambridge CB3 9LG (GB).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **AMBIPOLAR, LIGHT-EMITTING FIELD-EFFECT TRANSISTORS**

(57) Abstract: An ambipolar, light-emitting transistor comprising an organic semiconductive layer in contact with an electron injecting electrode and a hole injecting electrode separated by a distance  $L$  defining the channel length of the transistor, in which the zone of: the organic semiconductive layer from which the light is emitted is located more than  $L/10$  away from both the electron as well as the hole injecting electrode.

